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Improving Order Fulfillment in an SME e-Commerce Company

Helsinki Metropolia University of Applied Sciences

Bachelor of Engineering

Industrial Management

Bachelor's Thesis

Date 29.4.2013

Metropolia

Tekijä(t) Otsikko Sivumäärä Aika	Olli Rapanen Tilaustoimintojen kehittäminen PK e-commerce yrityksessä 44 sivua + 2 liitettä 29.4.2013
Tutkinto	Insinööri (AMK)
Koulutusohjelma	Tuotantotalous
Suuntautumisvaihtoehto	Kansainvälinen ICT-liiketoiminta
Ohjaaja(t)	Yliopettaja Thomas Rohweder

Tämä insinöörityö käsittelee pienen yrityksen toimitusketjua jonka markkina-alueena on elektroninen kaupan käynti. Työn painopisteenä ovat toimittajasuhteiden hallinta ja yrityksen hankinta toiminnot. Tavoitteena työllä oli antaa suosituksia ja ehdotuksia kohde yritykselle kuinka vastata haasteisiin ja parantaa tilaus toimintojaan välttääkseen ja eliminoidakseen riskejä.

Työ toteutettiin tapaustutkimuksena. Ensimmäiseksi toteutettiin nykytila analyysi kohde yrityksen tilaus toiminnoista sekä luotiin siitä prosessikuvaus. Perustuen tähän analyysiin isoimmat haasteet ja riskit tunnistettiin ja kartoitettiin. Aiheeseen liittyvien tehtävien parissa työskentelevien yrityksen työntekijöiden haastattelut olivat pääasiallinen tiedon keräysmenetelmä, mutta myös tutkijan omia kokemuksia käytettiin hyödyksi. Nykytila analyysiä seurasi katsaus aiheeseen liittyvään teoriaan. Käsitellyt aiheet olivat toimitusketjun hallinta, hankinta, elektroninen hankinta, toimittaja suhteiden hallinta, toimittajien hankinta ja arviointi sekä prosessit. Teoriakatsaus perustui kirjallisuuteen ja aiempiin aiheista tehtyihin tutkimuksiin.

Insinöörityön tuloksena annettiin kohde yritykselle ehdotuksia tilaus toimintojensa parantamiseksi. Nämä ehdotukset perustuivat nykytila analyysin ja teoreettisten parhaiden käytänteiden vertaamiseen. Ehdotukset koskivat toimittajien hankintaa ja mittaamista, kysynnän hallintaa, toimittaja integraatiota ja prosessien vakiinnuttamista. Nämä aihealueet todettiin tärkeimmiksi kehityskohteiksi joita kohde yrityksen kannattaa harkita mahdollisissa tulevissa kehityshankkeissaan.

Avainsanat	SCM, SRM, hankinta, elektroninen kaupankäynti

Author(s) Title Number of Pages Date	Olli Rapanen Improving Order Fulfillment in an SME e-Commerce Company 44 pages + 2 appendices 29 April 2013
Degree	Bachelor of Engineering
Degree Programme	Industrial Management
Specialisation option	Global ICT-business
Instructor(s)	Thomas Rohweder, D. Sc. (econ.)

This study discusses the supply chain of a small e-commerce company. The focus is on Supplier Relationship Management and procurement. The objective of this study was to give recommendations and suggestions for the case company to answer the current challenges and to improve the order fulfillment operations in order to avoid and eliminate risks.

The research was conducted as a case study. The case study started with conducting a current state analysis of the case company's order fulfillment operations, including a process flow description. Challenges and risks were recognized based on this analysis. Data collection was based on interviews with case company employees working on the related operations. The researcher's own observations were also utilized as one method. Following the current state analysis a theoretical review on related topics was conducted. The topics discussed were Supply Chain Management, Procurement, E-procurement, Supplier relationship management, supplier acquisition and assessment and processes. This review was based on literature and earlier studies written on these topics.

Based on the findings from the theoretical practices and the current state of the order fulfillment recommendations were provided for the case company. The recommendations cover supplier measuring and assessment, demand consideration, supplier integration and establishing processes. These proposals were identified as the main areas of concentration in possible future improvement to be performed by the case company.

Keywords	CSM, SRM, Procurement, E-commerce

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1 Introduction

This study talks about supply chain management in a medium sized e-commerce company. The focus is on order fulfillment operations with outsourced logistical functions and how they are managed in online business with a medium sized company operating in a very flexible, fast phased and constantly growing market area of e-commerce. Order fulfillment matters related to invoicing and financials are excluded from the topic area of this research.

Commerce traditionally means the exchange of products or services from a producer to the final customer. In short, this means the buying and selling of goods and services. Commerce involves the whole process of selling from pre to after sales. Ecommerce means this same process of sales is done through internet networks. E-commerce simply transfers for example the traditionally physical activities of ordering, paying and fulfilling in to an online environment (Baynon-Davies. 2009).

E-commerce, often also referred to as e-business or electronic business, can be defined in various ways. It can be seen to include only the commercial activities of a company taking place on the internet or as all the activities and transactions between a company and any third party it operates with (Chaffey. 2011: 10). According to Baynon-Davies (2009) e-business can be seen as all the ICT activities of a company whereas e-commerce is the use of ICT to enable external activities and relationships with individuals, groups and other businesses. Lee and Whang (2001) argue that e-business refers to both front-end and back-end operations. All these definitions claim that e-business is a higher level term including many functions like e-commerce. However, since in this study the company perspective only has e-commerce functions and no traditional bricks-and-mortar functions, e-commerce is seen as all the activities, both internal and external, back-end and front-end, of a company. The term e-commerce also covers the business as a whole and is used as the general term referring to the company, its type and area of business. Specifically the business area could be defined as that of an electronic shop, which closely correlates with the above mentioned definition of the term and therefore e-commerce is suitable to be used as a definition for the whole area of business.

The first precursors of e-commerce were initiated in the 1980s as Electronic Data Interchange (EDI) systems that worked through private networks. These systems didn't enable all the functionalities in the way the Internet does and today we automatically relate e-commerce to the Internet. Therefore in this study e-commerce is defined as modern e-commerce enabled by the Internet (Laudon and Traver. 2011: 60-61).

In the first phase of e-commerce, 1994-1997, it was mainly about companies having their own web sites (Kalakota and Robinson. 2000). Since then e-commerce has evolved in a few phases and today companies exist and flourish without even having a physical office. Baynon-Davies (2009) says that conventional Bricks and Mortar companies have evolved to Clicks and Mortar and Clicks Only companies. In the 1990's e-commerce in most cases was supporting a company's activities whereas today it can be the activity of a company. E-commerce holds huge potential. According to the International Telecommunication Union (2013) about 39 % of the world's population is connected to the internet with growth from 10 % just ten years ago. This creates more demand for e-commerce businesses followed by more small companies launched on the internet. As an example of the level of growth, China's e-commerce sales increased about 130% in 2011. Global e-commerce sales are estimated to reach 1 trillion euro in 2013. (Abdul Montaqim. 2012) According to the U.S. Census Bureau the sales of e-commerce companies in the U.S. was $57.0 billion for the third quarter of 2012. This is 5.2 % of overall commerce and it has grown from 2011 by 17.3 %. The figures and forecasts show enormous potential in e-commerce.

This research focuses on a company categorized to small and medium sized companies also referred to as SMEs. SMEs can be defined from several perspectives depending on the country of residence. This study defines SME after recommendations given by the European Commission. SMEs are enterprises that employ less than 250 persons, and whose annual turnover doesn't exceed EUR 50 million and/or whose annual balance sheet total doesn't exceed EUR 43 million (European Commission 2003).

The size of the company and the area of business strongly affect the supply chain. It can be said that it is rather easy to establish a supply chain in the e-commerce world but it is as easy to completely fail and very hard to master. A traditional supply chain is not often the first option for small e-commerce companies and often supply chains are outsourced. However this supply chain is critical to the company since from the customer's perspective the service is just a tool and the delivery of the product is the key

function of interest. Therefore the supply chain is critical to the e-commerce company even though it's not its area of expertise. If this supply chain fails, it will have a direct and possibly critical impact on the company (Östring. 2004: 5).

This fact requires attention from the company's management. Even with the supply chain outsourced, the relationship with the suppliers has to be well managed. No matter how well the service, i.e. the front end works, if the end customers are not receiving their purchases, the company is in trouble.

1.1 Case Company's Market

The case company is an SME e-commerce company operating a recreational shopping website that combines game mechanics with traditional shopping to increase customer engagement and to awaken spontaneous demand. On the side of the traditional web store the case company offers a pay-to-participate auction. This auction service offers several game mechanics that has created high customer interest and satisfaction by giving users the possibility to challenge each other and themselves. Through these functions the case company is able to offer its customers significant discounts on brand name items.

The case company has developed the traditional pay-to-participate auction concept into an interesting and customer friendly service. This way it has been able to overcome the traditional problems in the business, i.e. establishing customer satisfaction and maintaining customer base. This success brought fast growth for the company in 2012. Naturally this presented challenges as the growing demand required rapid recruitment and expansion of all parts of the company. These challenges had the strongest effect on the company's supply chain operations with fully outsourced logistical functions. Having learned from the challenges and problems in the past the company's supply chain has strongly evolved during the last quarters of operation to reach its current state. This current state is presented in detail in Chapter 2.

1.2 Topic Area and Research Methods

The topic area of this study is the improvement of the case company's order fulfillment operations. The aim is to give operative recommendations for the case company to improve its performance. This does not include any execution or testing but is limited to a broad proposal of what direction the case company should take and what to consider when developing and improving its order fulfillment operations. The more specific research objectives will be derived from the current state analysis as described later in the study.

The research will be conducted as a case study. It will be based on qualitative empirical data collected from the case company. The current state analysis will be based on this data. A theoretical background will also be provided as a consolidation to the empirical data.

The theoretical background will be based on a range of literature and other publications chosen to be studied based on the challenges and problems found in the current state analysis. The theory part will present a description of supply chain management and more specifically to better relate the theory to the business problem, a background on procurement practices and supplier relationship management will be presented. This theoretical part is presented to identify common practices in procurement and relate them to e-commerce and the case company's field of business. All findings made will be compared to the current state of the case company, existing challenges and other findings made in the practical part, in order to answer the research objectives.

The data for the case study will be based on interviews and partly on participant-observation, data collection methods introduced by Yin (2009). He says that interviews targeted directly to the study related topics are an essential source of case study information. This targeted information will be supported by the observation data which is closer to reality, sees the whole context where the study is carried out and cuts down the inaccuracies and reflexivity factors that afflict the interview method. This collected data will work as a base for the current state analyzes which will give an image of the business area, operations and structure of the case company and present the state of the case company's supply chain operations. The challenges in the current supply chain of the case company will work as a supporting background for the business problem and research objectives.

1.3 Implementation

Altogether 4 interviews were conducted in February 2013. The interview questions were open questions and the interviews were conducted as open conversations. A frame of the interview questions used is presented in appendix 1. This frame was modified to cover the essential areas of the work of each interviewee. The interviews gave deep and detailed information on the supply chain operations of the case company since the data is based on experiences and perceptions of the people working with, and affected by, the supply chain. The interviewees were employees directly working with the researched areas of operations in the case company. Due to the small amount of employees working on related operations a small amount of interviews was stated to be sufficient to cover all the areas necessary for valid information for the case study. The interviewees are presented in the following figure.

	Position	Date
1.	VP of Product	19.2.2013
2.	Supplier Manager	19.2.2013
3.	Director of Operations	26.2.2013
4.	Supplier Manager	28.2.2013

Figure 1. Interviews in case company

On the side of the interview data some participant-observation data was also utilized. This data was based on the researcher's own experience and knowledge acquired during autumn 2012 and winter 2013 while working in the case company's procurement team.

The current state analysis will be presented in Chapter 2. The problems and challenges of the current state will be identified at the end of that chapter and the research objectives will be conducted from these problems and challenges. After this the theoretical background of this study will be presented in Chapter 3. It will talk about the subject presented earlier. After discussing the related theoretical practices and reviewing and analyzing the current state, the results of the study will be concluded in Chapter 4. Chapter 4 will strive to find the meeting point between theory and practice in order to

present suitable suggestions and directions for the case company. Final conclusions and discussion will be presented in Chapter 5 as well as a short evaluation of the research in general and its results. The main steps in the process of conducting the study are presented in the following figure.

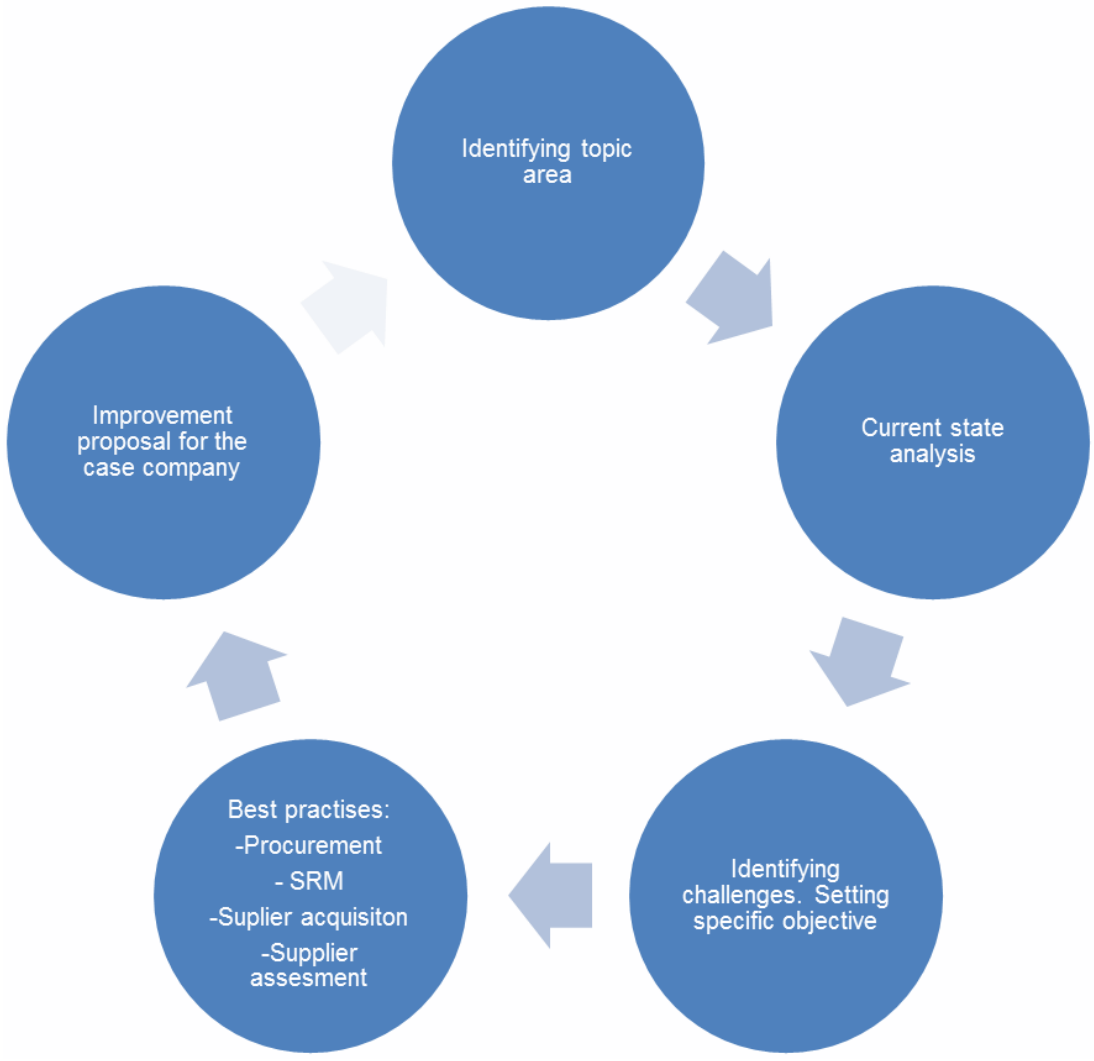

Figure 2. Process of the study

2 Current State Analysis

This chapter presents the operations of the case company and gives a description of the current state of the case company. The current state focuses on the supply chain and the order fulfillment of the company. A process flow chart of the current order fulfillment is provided in order to identify the relevant business problems. All information is based on the interviews held in February 2013 for the case company employees and on the researcher's personal experience acquired while working in the case company.

2.1 Overview of Case Company

The case company is an e-commerce company providing a recreational shopping website available in the continental United States. The website combines a traditional web store with a pay-to-participate auction. The company was established in 2009 and it has been profitable for the last two years.

The company's operations are based on recreational shopping; shopping that is done for the fun of it and not under a need for a certain product or service. This way the case company can awaken demand that wouldn't normally exist and thus it can be a very valuable partner by improving the sales of major e-commerce retailers.

The company consists of five main teams:

- Management
- Financial
- Development
- Order fulfillment
- Customer support

As the company is very customer oriented and strives for long term customer relationships and loyal customers, a fairly large customer support team has been decided to maintain inside the company in order to provide high quality customer support.

Order fulfillment takes care of all orders, shipments and supplier management. The company holds no stock of its own and all logistics functions are outsourced. All orders are handled, processed and sent to outsourced suppliers for shipments to end customers by the order fulfillment team.

The core know-how and competence lies in the service and its development. The development team deals with both back and front-end issues, maintains and develops the service and tools for internal use. The main functionality of the service is an auction function. In auctions the bidding starts from $0 and they run on a countdown clock. Every bid raises the price with $0.01 and re-starts the clock. When the clock runs down the highest bidder wins and the others can buy the product with its regular retail price.

An internal catalog exists that is created based on the inventory information received from the suppliers. From this catalog auctions are launched by an automated system. The type of products auctioned and the pace and amount of active auctions is selected based on current customer demand. Customer demand is defined by collecting data from customer behavior on the service and the web page. The product categories are as follows:

- Kitchen & Appliances
- Computers, Laptops & Tablets
- Video Games, Music & Movies
- Cameras & Camcorders
- Gift Cards
- Bid Packs
- Kids & Toys
- Cell Phones, MP3 & Headphones

- Home & Office
- TV & Home Theatre
- Hobbies, Outdoor & Sports
- Fashion, Health & Beauty
- Cruises
- Other items.

About 30% of the products auctioned are gift cards, another 30% are electronic products and the rest 40% is divided between the other categories.

The case company has managed to successfully differentiate itself from its competitors with some unique features established in the service. This has led to higher customer satisfaction and naturally to a high growth in the user base and eventual revenues. Therefore the company has grown with the service and expanded its operations by enlarging teams and developing all of its operations. With the growth new opportunities as well as challenges have emerged. These challenges are discussed from the supply chain point of view at the end of this chapter.

2.2 Case Company's Supply Chain

As mentioned earlier in the study, the case company doesn't hold any stock and all logistics functions are outsourced. This mainly leaves only procurement activities as insourced supply chain activities. Due to the small size of the company all indirect goods, such as office supplies, are purchased on a user buy principle and therefore are not discussed in this research. The procurement in this case means the procurement of direct goods, the final products sold to the company's customers. Since no logistical functions exist the procurement of goods refers to order fulfillment, operations which are performed in the order fulfillment team and discussed with more details later in this chapter. These operations cover the processing of customer purchases, auction wins and normal priced products, to orders for outsourced suppliers who ship the purchased products directly to the customers. The order fulfillment team also sources new prod-

ucts based on market data and customer demand. These functions are outside the focus of this thesis and are therefore not discussed.

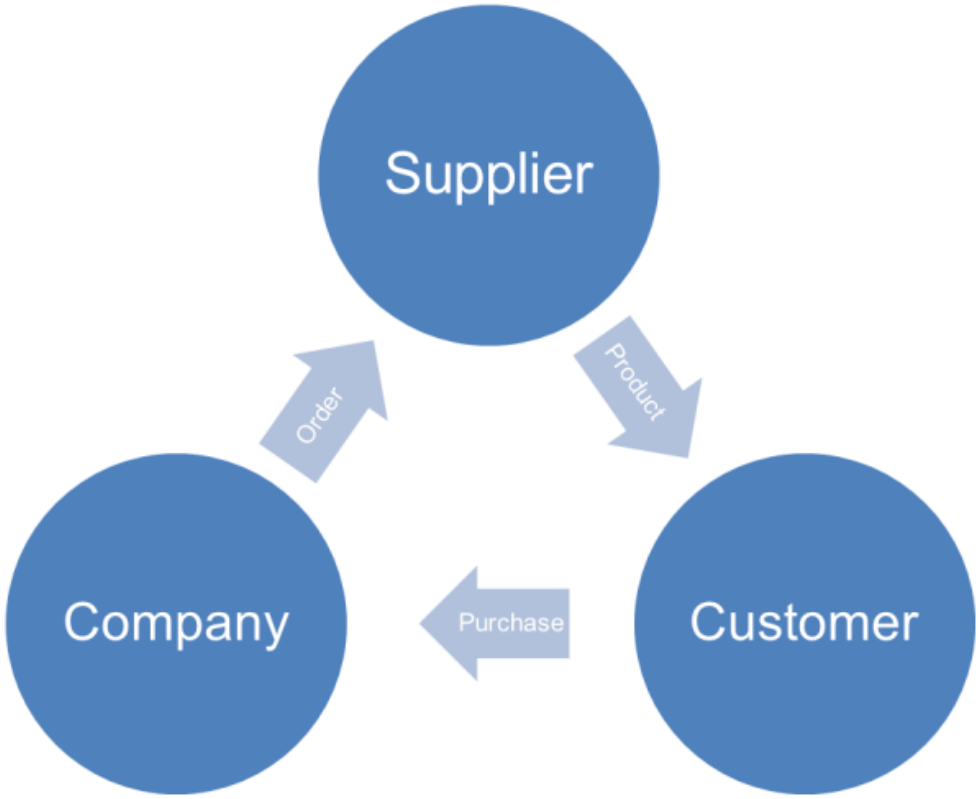

Figure 3. Purchase-to-delivery

Most of the case company's suppliers are online retailers with their own web stores and inventories. Using retailers as its suppliers, the case company gains advantage from their existing knowledge and supply chains.

The case company holds a pool of about 10 suppliers of which about 4 suppliers are the most active ones and with which the company has larger daily orders. The company is wishing to expand its pool of suppliers and at the moment is approaching mostly big online retailers to get partners with a wide catalog and large inventories. For these very large retailers their reputation speaks as an indicator of quality performance but as for others some criteria for acquisition exists: order tracking has to be provided and time from receiving an order to its shipment can't exceed 48 hours with routine orders. After the acquisition the suppliers are mostly measured only with fill rate of orders and shipping cycle time of products.

The current shipping cycle time, from when a customer made a purchase to when the supplier shipped the product and provides tracking information, varies from 0.5 to 7 days. The average cycle time is 2 days but in case of back-orders or complete out of stock situation the cycle time can stretch. This time does not include the time that the delivery takes or customer respond time in the case where a replacement offer needs to be selected.

As mentioned before the growth of the company has forced it to develop its supply chain. Through various changes that have taken place during the last few quarters of operation the case company has settled upon two methods how purchases are processed into orders for the suppliers. These methods are described as a process flow chart that can be found in Appendix 3. The same processes are described and discussed in detail in the following sections.

2.2.1 Drop Shipping

Most of the case company's order fulfillment has been performed as drop shipping. In drop shipping the orders are listed in spreadsheets that are then sent to the supplier through e-mail or via a FTP (File Transfer Protocol) system. This process requires hand-made work and is therefore more exposed to human errors.

Contracts with suppliers used for drop shipping have been left quite open. This has enabled a high level of flexibility and possibility for rapid changes in the ways of operating. However open contracts also present some risks. These risks are discussed at the end of this chapter.

The order fulfillment process is described in detail in the following paragraphs.

After a user has purchased a product the system directs it automatically to one of the two methods mentioned earlier. The first method sends orders automatically and the other one creates lists of paid purchases categorized under matching suppliers and marks them as future orders in the company's back end.

After this starts the hand-work. First, Supplier relationship manager (SRM) checks daily information received from each supplier under his/her responsibility. There are no contract clauses for the suppliers to provide this information and therefore acquiring the

information is proactive work performed by the SRMs. The information includes a list of pending orders, orders that are currently waiting for fulfillment at the suppliers' end and a list of possible changes in the weekly inventory. The pending orders have 3 to 5 days to be processed and fulfilled. If the pending orders are not fulfilled in this time period, the SRM will send a cancellation order to the supplier and change the internal status of the related purchases. This action will also prevent future auctions from being launched for the related products. After this another person will process these purchases and source them from another supplier from the company's pool of suppliers or search for a new source. If there have been changes to the suppliers' inventory, the same status change is performed in order to not auction the related products. These pending orders and inventory changes don't necessarily occur daily.

After the previously explained actions have been performed the actual daily order is processed. The SRM pulls out the order file from the back-end system for each supplier under his/her responsibility. This order file includes all purchased products provided by a certain supplier and which have the status of *ready for ordering*. The SRM checks this file for any mistakes, for example empty cells and corrupted address information. The same file is then double checked by another SRM to avoid human errors and then sent to the supplier. Usually the daily order is sent at the same time with the possible cancellation order. These order files are problematic since they are always sent on separate files. This means that all updated information such as *shipped, pending* or *cancelled* will create a new file and cause the same order lines existing in several files with different statuses.

After receiving the daily order file the supplier has 48 hours to fulfill the order and to provide tracking information back to the case company by e-mail. As this information is received via e-mail, a functionality exists that searches the right information from the e-mails and automatically updates it to the user's profile on the case company's front end system as well as in the back end for internal information.

2.2.2 Market-Place Integration

As mentioned before the drop shipping orders include hand-made work which takes some working hours and is exposed to human errors. For this reason the case company has recently started using system integration with its suppliers. With this integration the case company's system communicates with the supplier's system and in this way

orders go directly to suppliers and eliminate the need for hand-made orders. This integration covers about 40% of the total order volume at the moment but it is expected to cover up to 80% in the near future.

Unlike with drop shipping contracts with integration partners are made less open. As the integration work takes time and requires a more firmly established relationship with the suppliers the contracts are required to be more binding.

As mentioned before the auctions launching is automated. With the market place integration there is an automated tool that sends queries, before launching each auction, to the suppliers' inventory to see if adequate stock exists. If the stock for some products is inadequate the auctions for those products won't be launched. Otherwise the auctions are launched, and purchases made by users are automatically processed to the supplier's system without any hand work in between. This tremendously decreases the possibility of errors in the orders. In case that stock out issues still arise, those orders will be cancelled and routed elsewhere manually through the same steps described for drop shipping in the previous chapter.

2.3 Challenges of Current Order Fulfillment

Despite the fact that major improvements have been made to the company's supply chain operations and that the company is very successful among pay-to-participate auctions, there are still areas to improve and develop and the company is still in a relatively early stage of evolution. It is still open and looking for new directions and ideas and actively establishing and testing ways of operating. This requires a certain level of flexibility and ability to quickly adapt to new conditions from all parts of the company. Active search and establishment of new ideas has both positive and negative effects.

As the operations are almost constantly changing no clear and documented processes exist. The current processes are mastered and mostly developed by the SRMs, dependent on pro-active work and haven't necessarily been thoroughly thought through. Therefore trouble can arise if unexpected situations occur. No one else might be able to perform the work as instructions are not documented and introduction for new employees can be very confusing. As the whole company's operations can change very

rapidly so can their employment and knowledge situation. Some documentation should exist and establishment of process thinking should be considered.

Being able to forecast future is an essential success factor for any company. A company has to be able to estimate how much demand it will face in order to respond to it. As all products sold through the service are auctioned products with the web store option, theoretically demand can vary from only one product to dozens of products per auction. In practice the demand doesn't vary that much, but as inventories are never endless and are nowadays tried to be kept as low and as close to actual demand as possible, a big challenge lies in balancing between forecasts, auctions launches and inventory information.

As the inventory information received from the suppliers is very crucial for avoiding sales of unavailable products, the accuracy and reliability of the information should be 100%. This sets another challenge and a risk for the case company since contracts with suppliers are very open and stock information is the main information behind launching auctions.

At the moment the document flow between the case company and its suppliers is mostly happening via e-mail and without any established schedules or frameworks. The amount of pro-active work is high and therefore this system is heavy, time consuming and vulnerable to human errors. Also the repetitive information display increases risk for corrupted information and confusion. Another weak part in the system is the tracking information which is received from suppliers and automatically read from e-mails. This system is exposed to errors since the e-mails can vary and the automation can be unable to read the relevant information and forward it to the customer's profile page in the service.

A common challenge can be recognized from the discussion above. A lack of integration exists in the company's order fulfillment. The company has already responded to this challenge by establishing market place integration as described earlier. However this integration still holds challenges in it. The reliability of inventory information received from the suppliers is still as significant as well as the balancing between demand and inventories. Other risks that exist are for example the low amount of market place integration suppliers. As mentioned before the integration is planned to cover up to 80% of the whole order volume. This high rate of total volume trusted to be fulfilled

by a very small amount of suppliers holds a very high risk. Operations of suppliers are crucial for the case company to be able to operate but not vice versa. Operations of the case company might be a very minor part of the suppliers' operations and therefore a risk lies in optimizing these supplier relationships. The amount of the relationships should be optimal and the size of the supplier acquired should be considered as a significant risk exists.

In order to answer the lack of suppliers the company faces another challenge in acquiring new suppliers. As fluent and reliable supplier operations are crucial for the case company some ways of evaluating possible suppliers to be acquired should exist as well as methods to measure the acquired suppliers for possible future integration.

2.4 Business Problem and Research Objectives

As mentioned before the logistical functions are not a key area of expertise for the company and thus the functions have been mostly outsourced. However these functions are essential for the company's success and therefore cannot be neglected. From a customer's perspective the logistical functions as the only physical functions are the very key ones as the shipping and delivery of their purchases is what brings them their satisfaction at the end of the day.

Summary of challenges and risks in order fulfillment:

- Supplier acquisition and evaluation
- Managing suppliers
- Information flow, reliability and accuracy
- Forecasting demand
- Lack of established processes

The case company has experience in the past of what happens when the order fulfillment operations are not working properly and logistical difficulties occur. The effects of risks turning in to actual problems include increasing delivery times, late shipments,

lost orders, complaints and generally unhappy customers who ultimately take their money elsewhere.

So much has been learned from trouble in the past that as discussed before improvements have already been made and at the moment the risks and challenges are not turning into problems in an uncontrollable manner. However the situation can change rapidly and as the system is somewhat fragile, some of the risks show a lot of potential of expanding into real problems and therefore the case company should not settle for the current situation. As some of the risks and challenges could not only be avoided but eliminated completely, the study will present a proposal to do so. This proposal will be based on the connective points derived from the current state analyses and a literature review on related subjects as discussed before.

Objective of the study

- To give recommendations and suggestions for the case company to answer the current challenges and to improve its order fulfillment operations in order to avoid and eliminate risks.

3 Theory

This chapter provides an introduction to the theory relevant for this research. It covers some areas of Supply Chain Management (SCM) concentrating on the Business to Business (B2B) side of the process and more specifically on procurement functions. Also topics such as Demand Forecasting and internal processes to enable fluent supply chain functions of a company are reviewed. All the topics strive to give an e-commerce perspective to complement a traditional business model perspective.

A supply chain is the chain of actions to transfer raw materials to final products and to deliver them to fulfill customer needs and requests. A supply chain consists of all material, information and money-flows including manufacturers, suppliers, transporters, warehouses, retailers, customers and all parties included in the process (Chopra and Meindl. 2004: 4) (Ritvanen et al. 2011: 9-10).

In this research a clear distinction between a supply chain and logistics has to be made. As suggested by Bowersox et al. (2013) logistics is just a subset of the whole supply chain. Logistics deals with the more physical parts of a supply chain such as transportation, warehousing, handling materials and packaging whereas a supply chain deals with planning and optimizing the whole supply chain.

In the 20th century businesses' supply chain functions were considered as a non-value producing part of the business functions and were therefore often neglected. Boversox et al. (2013) claim that as recently as in the 1990's the cycle time from customer order to delivery ranged from 15 to 30 days or even longer. This average cycle time was already very long not to mention cycle times in the case of unexpected delays. Very large stocks were standard practices to avoid any further delays as the process on a normal day was so time consuming. Enabled by the development of Information Technology (IT) and driven by growing customer demand and expectations huge changes in supply chains occurred in the end of the 20th century that developed the whole business area to different levels. Previously neglected functions were now considered as part of the key value adding elements of business. With IT still developing every day supply chains are still evolving, improving and striving for perfection (Bowersox et al. 2013: 2-3).

One of the main ways of assessing a supply chain is to examine how material flow is triggered. As mentioned earlier a supply chain exists to satisfy a customer request or a need. This customer need can be driven by pushing or pulling models, in other words it can be driven by a company offering products or services or a customer requesting for products or services. A push model is an anticipatory model created proactively by forecasting and planning ahead. No customer requests yet exist but materials are manufactured, stored and pushed through a supply chain in order to create demand at the end or the chain. An example of demand created by pushing materials is a discount. In a case of discount or sales, demand didn't exist until a company offered a certain product or service for sale and in this way created a need, a demand. An opposite to push model is the responsive pull model. It aims to optimizing inventories, manufacturing and timing and to eliminate dependence on forecasts. This reactive perspective is customer-oriented as the demand originates from the customer need. In this case the material flow is pulled through the supply chain triggered by the customer demand. A modern supply chain uses a combination of push and pull, a hybrid model. In a hybrid system manufacturing at the beginning of the chain is efficient by pushing production. At the same time a customer-oriented pulling system is performed by enabling the production system to involve main customer needs at the end of the chain (Ritvanen et al. 2011: 10-12) (Bowersox et al. 2013: 19-20, 171).

Supply chains require remarkable amounts of resources and a lot of value can be delivered through them. Optimizing supply chains can significantly reduce a company's expenses and therefore strategic decisions and management are required (Laudon and Traver. 2011: 794-795).

3.1 Supply Chain Management

A procedure adding cost efficiency and customer value was taken into use in the early 1990's as Supply Chain Management (SCM). Supply chain management covers all actions, actors and structures from material sources to the end customer. These actions are such as manufacturing, transportation, procurement, distribution and money flows. The purpose of SCM is to connect all these elements under one supply chain to add seamless co-operation and relationships between all actors in the chain, to create competitive advantages and to deliver value throughout the whole chain (Ritvanen et al. 2011: 9-10).

As stated in the previous paragraph Supply chain management was taken into use in the early 1990's. Ross (2003) says that before this companies were unmindful of the importance of the relationships between themselves and their trading partners. He also suggests that the core-competitive advantages can be achieved by looking outwards for collaborative alliances with supply chain partners. The transformation of companies to invest in SCM was driven by several factors such as globalization and development of IT tools. According to Ross (2003) the strongest single factor affecting the now days SCM can be said to be Internet based technologies. Bowersox et al. (2013) say that deepening relationships with supply chain partners through integration and striving for perfection is still today dramatically changing Supply chain practices.

Different strategies for supply chain management exist. The strategies discussed here are related to the supply chain pushing and pulling models discussed earlier. The common SCM strategies are presented in Figure 4 below.

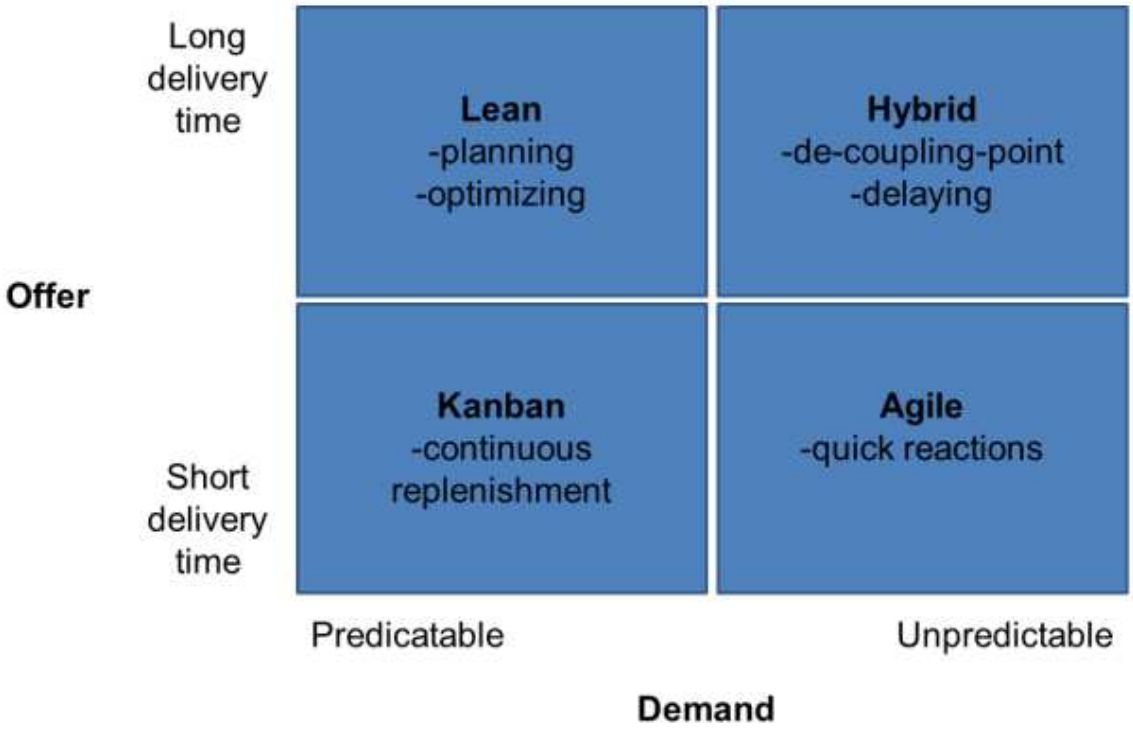

Figure 4. SCM strategies (Ritvanen et al. 2011: 138).

The strategy depends on offer and demand. Demand varies on how predictable it is and offer varies on the time that a delivery takes. If demand is very unpredictable and delivery times are long a hybrid-model is used. Hybrid-model means a combination of lean- and agile-models. In practice it means that semi-finished products are stored

which are then rabidly and with a customer oriented approach modified and manufactured to final products. De-coupling-point refers to the point where the customer order changes the hybrid model from lean part to agile part. In agile-model the unpredictability and short delivery times oblige the strategy to be very agile to avoid any out of stock situation. If the delivery time is short but demand can be predicted a Kanban-model comes in use. In Kanban a used product will be immediately replaced with a new product enabled by the ability to foresee the need and the short delivery times. However if the delivery times are not short Lean-model is used. As delivery times are long but demand can be foreseen longer term planning has to take place in Lean. This planning aims to cut all waste functions from the supply chain and only remain the necessary and value adding functions (Ritvanen et al. 2011: 138-139).

3.2 Procurement

In this research no distinction between procurement and purchasing exist. The two terms are considered as synonyms.

As mentioned before the significance of purchasing to a company's competence and financial result has increased during the last few decades when companies have become more focused on concentrating in their core know-how and started to outsource other activities. In other words companies have realized how a significant share of their expenses comes from purchasing and how outsourcing activities require more managerial attention. One perspective claims that the share of purchasing of the total revenue in an industrial company is about 60-70 %. Another perspective says that in North America the share of purchasing is about 55% of every sales dollar. Because of these reasons the focus of purchasing is now days on the total cost of ownership and on developing relationships between the buying and selling organizations. This has caused procurement to shift in to a more strategic activity (Ritvanen et al. 2011: 31) (Bowersox et al. 2013: 79-80).

Ritvanen et al. (2011) divide procurement in three main groups of functions: strategic, tactical and operational functions. Strategic functions include for example the planning and developing of operations, supplier relationship management, forecasting and choosing and measuring suppliers. Tactical functions include budgeting and contract negotiations. Operational functions include everyday tasks such as ordering, invoicing

and control of shipments. Procurement functions can be described as pro-active or re-active functions. For example strategic functions are more pro-active functions as they are looking into the future and trying to optimize future operations whereas operational functions are more re-active dealing with every day activities.

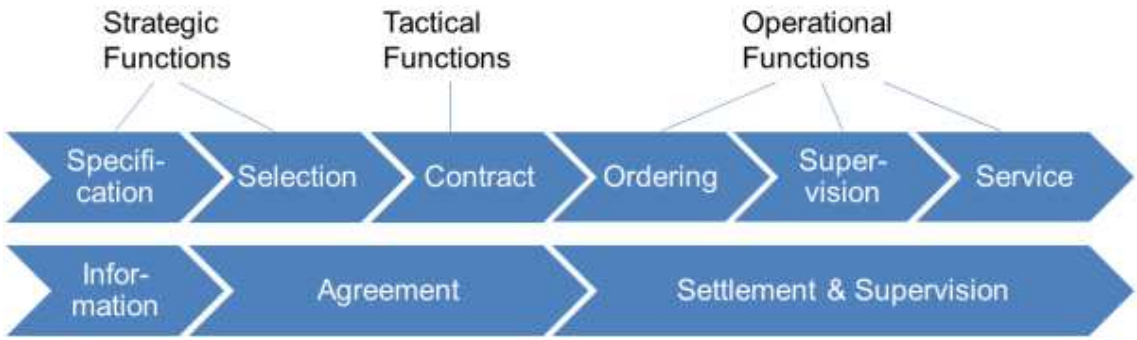

Figure 5. Steps in a procurement process (Meier and Stormer. 2009: 50)

It is clear that all procurement should strive for foreseeing the future and therefore for pro-activity but as for most companies, procurement operations are both pro-active and re-active work (Ritvanen et al. 2011: 32).

Procurement strategy

The ultimate goal of procurement is to create value for both the purchasing organization and its customers (Ritvanen et al. 2011: 181). This goal is reached by developing a suitable procurement strategy. For the purposes of this thesis the strategic perspectives discussed is based on a point of view where merchandise is ready made products and all physical logistics are outsourced. Also the research assumes, as suggested by Bowersox et al. (2013), that all products irrelevant for the main profit creating activity of a company, such as basic office supplies, are purchased on a user buy principle where users of these goods are allowed to purchase the goods themselves. This includes all indirect MRO goods, maintenance, repair and operational goods (Laudon and Traver. 2011: 800).

Procurement strategies can be conventionally divided into two types. A competitive approach assumes that the competition between suppliers keeps the prices at minimum and this way purchaser can get the best deals. This approach focuses strictly on the price of the purchase as the key element and neglects all the other expenses in-

volved and possible benefits of another perspective. The other strategic type is a cooperative approach which emphasizes the relationship with suppliers. The first one is also referred to as the traditional approach and the second one the modern approach. At the following paragraphs more specific approaches are discussed mainly resulting from the modern procurement approach (Park et al. 2010: 496-497).

Outsourcing today is a big part of procurement in most companies. The risks that it involves emphasize the strategic significance. Outsourcing core competency capabilities is highly risky and therefore these capabilities are usually performed internally even if outsourcing them would be cheaper. Typically the outsourced activities are the non-core ones. This leaves the resources used for those activities now to be used on the development of core competencies. Outsourcing supply activities holds two main risks, loss of control and supply risk. When a company outsources some part of its supply it loses all control over those activities to its supplier. Supply risk refers to the case of unexpected events that might affect the company's operations negatively (Bowersox et al. 2013: 83-84).

Another aspect that should be considered in the development of an efficient procurement strategy is volume consolidation. This strategy deals with optimizing and traditionally reducing the number of suppliers a company deals with. Before a point of view existed, that strategic advantage was gained from dealing with large number of suppliers. This would lower the risk of disturbance in supply since a company could choose to source from several options. Today however the value of concentrating on fewer suppliers has been acknowledged. As a company uses smaller number of suppliers it will automatically deal with larger single orders. This means more money for a single supplier and eventually possibilities for that supplier to improve its operations with the buying organization. If an organization is constantly changing its supplier no single supplier will be willing to invest in that cooperation. With consolidating volumes strategic advantages can be gained through establishing deeper cooperation with a small number of suppliers instead of having a frail and undeveloped relationship with a large number of suppliers. However, volume consolidation does not mean a single source procurement strategy. It means a significantly smaller number of suppliers that use to be best procurement practice. Also it means the qualifying and developing of a few main suppliers but still maintaining a contingency plan (Bowersox et al. 2013: 84-85).

As implied above todays best procurement strategies emphasize the meaning of creating deeper relationships and even partnerships between an organization and its suppliers. This leads to a procurement strategy called Supplier Operational Integration. In operational Integration a company and its suppliers strive to integrate their processes and activities in order to improve their performance. In practice this can mean the buyer sharing its sales information with the supplier so that it's easier for the supplier to foresee the buyer requirements. Companies integrating their operations can also mean integration of processes and their development which can lead to reduced cycle times and improvement of communication to avoid errors. When companies are developing mutual processes a lot can be learned from each other's ways of operating. Common results of Operational Integration are cutting waste, reducing costs and creating deeper relationships to improve common operations (Bowersox et al. 2013: 85-86).

As mentioned earlier the ultimate goal of procurement is to create value. This value creation can be reinforced by applying even deeper supplier relationship integration on an organization's operation. This procurement strategy is called Volume Management. In volume management the integration does not only include the actual supply chain operations but deepens the integration into other operations such as design. Including suppliers in a very early stage of design can help to cut waste and expenses in the future supply processes. Value management stretches the integration over the limits of procurement in to other areas of operating (Bowersox et al. 2013: 86-87).

As a conclusion of the procurement strategies represented above it is obvious that a high level of cooperation and partnership between a buying and selling organization creates mutual benefits and increases the amount of value delivered at the end of the supply cycle. However as Park et al. (2010) suggest benefits are not necessarily gained just by adapting a specific strategy but rather a "fit-for-purpose" combined, modified and fitted approach should be considered.

Many companies face a situation where a small amount of products bring in major part of profits. This 80/20 situation shows that not all purchases are equal but still many companies use same procurement methods for all products. Items with small value are procured in same ways as products with high value and strong impact on revenues. For these reasons all purchases should be classified and evaluated with methods that differentiate them from each other (Bowersox et al. 2013: 34, 87). According to Park et al. (2010) a widely used method for this is using a purchasing portfolio matrix to differ-

entiate products and products groups for adapting suitable strategies. This matrix method was first introduced by Kraljic (1983) and has then been modified and extended by many researchers. The following matrix (Fig. 6) is one of those modifications.

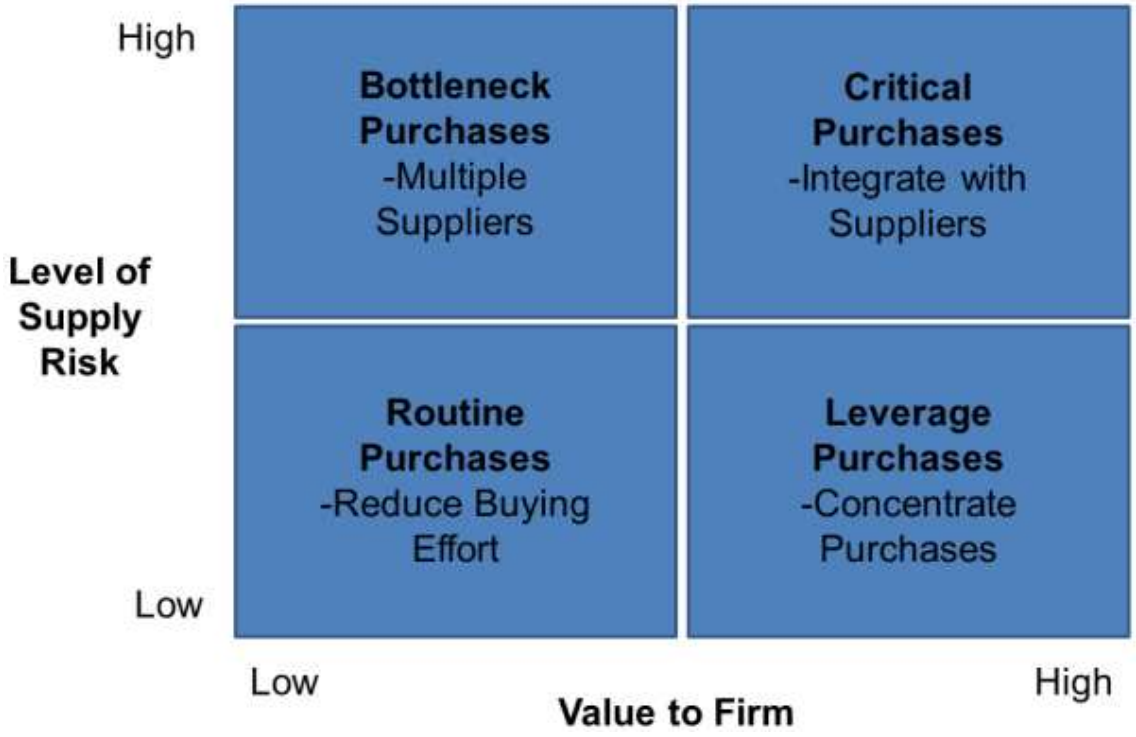

Figure 6. Procurement strategy matrix (Bowersox et al. 2013: 88).

As Kraljic (1983) stated a company's need for a specific strategy depends on two factors: the strategic importance of a purchase in the amount of value it creates and the complexity of the supply market in the level of risk it contains.

Routine purchases are items that create little value for the company and involve only little supply risk. These usually represent part of MRO items, items that are not crucial for a company's operations and are easily available. This strategy concentrates on reducing buying efforts in order to reduce resources spent (Bowersox et al. 2013: 88).

Bottleneck purchases represent items that have little value for a company but yet supply risk is high and unavailability can create significant operational trouble. As these items are available only from a small number of suppliers the strategy concentrates on maintaining several sources of supply. Not too many resources should be spent concentrating on these suppliers but still long term contracts should be established (Bowersox et al. 2013: 88).

Leverage purchases, similar to routine purchases, involve only little supply risk and several sources of supply exist. Different from routine purchases leverage purchases do hold a lot of value to a company and therefore specific strategy should be applied. Cost reduction and value creation can be generated from focusing these purchases to a smaller amount of suppliers (Bowersox et al. 2013: 88-89).

Critical purchases are normally the most strategic items for a company. They hold a high risk in supply and create a high value for the company. For these reason the strategic decisions should include deep relationships and high level of integration with suppliers (Bowersox et al. 2013: 89).

3.3 E-Procurement

E-procurement refers to all functions between buying and selling organizations performed via electronic communication networks. E-procurement, as discussed with traditional procurement earlier, can be divided in three main groups of functions: strategic, tactical and operational functions (Meier and Stormer. 2009: 50).

Several solution models for e-procurement exist. Meier and Stormer (2009) divide them in three main models: Sell-Side Model, Buy-Side Model and Market Place Model. In sell-side model the software for interactions is provided by the seller (supplier) gathering several buyers in its system. Buy-side works the opposite and there one buyer creates the software gathering several suppliers to its system. In market-place model the platform for interacting is provided by a third party with varying level of related services. According to Laudon and Traver (2011) the origins of e-commerce and e-procurement lie in buy-side and sell-side models and their variations but today market-place models are becoming more and more popular and several different types of market-place models exist. These models and types are discussed with more details above.

Originally e-procurement was established with the creation of EDI systems in the late 1980s. These systems allowed organizations to conduct business transactions through private networks, to reduced costs and errors and enabled same-day shipping. EDI has developed through a few steps defined by Laudon and Traver (2011) as Document automation, Document Elimination and Continuous Replenishment. In the first stage of EDI in the 1980s it was used for document automation. It replaced the postal system

for transmitting documents such as purchase orders, shipping notices and invoices. The second stage of EDI begun in the early 1990's triggered by the automation of processes, just-in-time production and continuous production. In this stage EDI was used to eliminate documents such as purchase orders replacing them with production schedules and inventory planning shared monthly with the suppliers. The third stage of EDI enabled by the Internet begun in the mid-1990's with further automation and deeper involvement of suppliers. Suppliers could access buyer's production schedules and they were required to meet the schedules and keep up the required inventories. This was driven by the standardization of business processes following the establishment of ERP systems. EDI systems have developed from being a tool between two partners to being a tool between a company and all its supply partners enabling continuous replenishment. Today EDI systems are still a major technology used in e-commerce between partnerships of buyers and sellers. However they do not work well with third party enabled dynamic marketplace environments (Laudon and Traver. 2011: 346, 803-805).

As said before different types of electronic marketplaces for procurement are becoming more and more popular. There are different ways that a third party organization can provide an online service to help companies to organize their procurement. Marketplaces can be divided by the scope of their service wetter they focus on a certain industry or not. Vertical marketplaces serve a specific industry whereas horizontal marketplaces offer specific products and services to a wide range of industries. General e-procurement firms serve wide range of industries with wide range of products. These general marketplaces offer services where buyers can view a specialized catalog of products and services of their interests. These catalogs are created based on catalogs provided in the service by sellers. This way the service connects buyers and sellers at a rate that would be impossible for a single firm to acquire. Sellers have more potential buyers and buyers have more selection. The marketplaces often also provide tools to handle catalogs, shipping, finance and managing supply chains. These models usually make profit from transaction fees or license fees. This way the marketplaces are able to offer a software a lot cheaper than what it would be for every firm to build their own (Laudon and Traver. 2011: 343-344).

Exchanges are another model of online marketplaces. Exchanges have a different scope and they are usually concentrated on a certain industry. Another difference from a general marketplace is the depth of services they offer. Exchanges usually aim for short-term contracts or single purchases and they create profit by fees based on the

size of a transaction between a buyer and seller. Industry consortia are industry owned vertical and horizontal marketplaces. These market places are often more successful than independent exchanges because they are owned and sponsored by large and powerful players in the industry (Laudon and Traver. 2011: 345).

3.4 Supplier Relationship Management

Concluding from the earlier discussion, a lot of potential value can be created from creating deep relationships and collaboration with a company's suppliers. A specific area of Supply Chain Management called Supplier Relationship Management (SRM). SRM is the part of a company's supply chain where it manages it relationships with its suppliers. Despite the possible wide scope of SRM in this study, as Ritvanen et al. (2011) suggest, it is classified as part of the strategic group of procurement functions.

Hughes and Wadd (2012) define SRM as a systematic approach to supply chain collaboration that enhances the business performance of both customer and supplier. They further describe it as enterprise-wide analysis of what activities to engage in with your suppliers, coordinated planning and execution of all activities with suppliers, leveraging supplier capabilities for competitive advantages. They say that with collaborative relationships with suppliers up to 49% more value can be delivered.

According to Bowersox et al. (2013) in order for companies to develop the best way to satisfy customer demand a high level of cooperation is needed. To achieve this level it is necessary for the companies to be willing to share information about future plans. As benefits of such level of cooperation Bowersox et al. (2013) mention eliminate waste and duplicate functions, optimize inventories, reduce risks and combine experiences and skills of collaboration partners.

Hughes and Wadd (2012) have carried out a comprehensive research on SRM in companies. Their research shows that the companies most successful with SRM are not the ones primarily concentrating on software development and supplier performance but the ones who concentrate on the human side of SRM, organizational cultures and ways that people interact. The following figure represents the significance of certain functions to successful SRM.

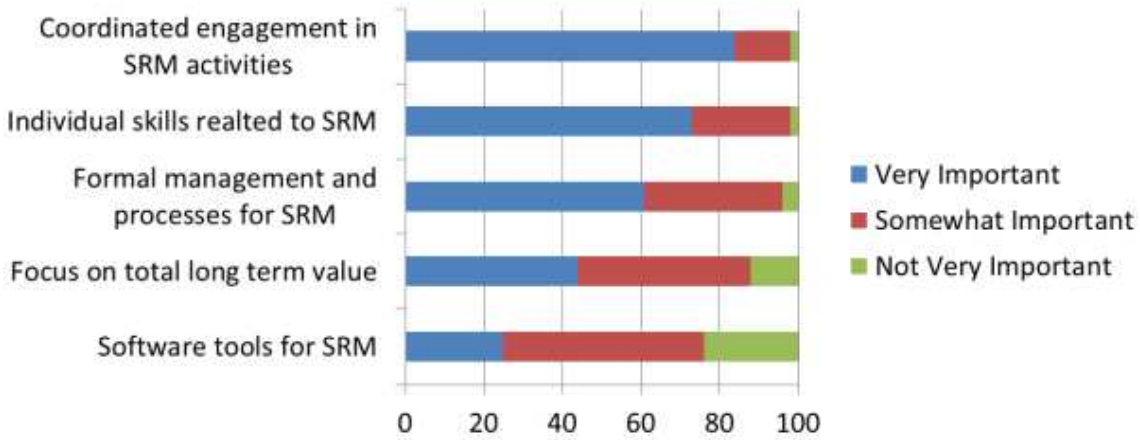

Figure 7. Most relevant SRM functions (Hughes and Wadd. 2012: 26).

Based on their research, Hughes and Wadd (2012) have created seven main steps involved in successful SRM:

1. **Focus on suppliers with greatest potential to create value:** Implementing SRM requires investment. These investments should be used on developing SRM with the suppliers with the most potential for mutual benefits. An implementation effort with too many suppliers leads to wasted resources.

2. **Treat all suppliers with high level of respect and professionalism:** Treating suppliers as subordinate to you undermines the amount of value created.

3. **Make an effort in understanding suppliers better:** Familiarize yourself with your supplier's strategies, cultures and capabilities. This way recognizing opportunities for creating more value with them becomes easier.

4. **Make an effort in helping suppliers understand your company better:** Likewise your suppliers need to be familiarized with your functions in order to increase mutual benefits.

5. **Build and sustain trust with your suppliers:** Lack of trust can be a huge barrier to creating value. Trust between partners creates efficient information sharing and willingness to invest resources. Trust has a positive effect on problem solving, identifying new opportunities and solutions and eliminate risks.

6. **Ask suppliers to give feedback on your performance:** Measuring performance should not only measure suppliers but your company's performance as well. In a two way relationship solutions to problems could lie in either end.

7. **Be open to supplier ideas and suggestions:** Suppliers can give significant benefits to problem solving and innovativeness with their unique capabilities and expertise.

3.5 Supplier Acquisition and Assessment

Before any relationships can be created or any SRM strategies implemented the suitable suppliers have to be acquired and chosen carefully and with consideration. This selection process also leads to a higher possibility for the established relationships to be successful (Bowersox et al. 2013: 85-86).

The level of resources used for acquiring new suppliers depends on the strategic value of the purchases. As discussed earlier routine purchases need the least resources for sourcing and on the other hand critical purchases require significant amount of resources in order to acquire the most suitable suppliers.

Park et al. (2010) identify two main challenges in acquiring suitable suppliers as follows.

1. Deciding on which criteria to assess the supplier candidates

2. All suppliers are different and therefore they need to be assessed differently

Further challenges presented by Park et al. (2010) have to do with the decision between single-source or multi-source supply. In single-sourcing a company has to be able to select the very best supplier of all candidates. In multi-sourcing several suppliers have to be selected and the right supply has to be sourced from the right supplier.

Companies can categorize suppliers as preferred, acceptable and developmental. A preferred supplier is one whose functions already fit a company's purposes but sometimes a supply for a buyer's need might not yet exist. In this case a company has to perform supplier development in order to satisfy its need for supply. Other factors such

as, high cost of current supply, lack of supplier capacity to meet demand or dissatisfaction on current suppliers can trigger a supplier development process (Bowersox et al. 2013: 90-91).

Traditionally in acquiring process audits are performed on supplier candidates. These audits involve some company personnel to visit the supplier facilities and examine their equipment, facilities, personnel, systems and processes. Also the quality of functions and the willingness of a candidate to commit to the buying company are evaluated. These audits are done in order to identify the supplier candidate's suitability for a future collaboration, development and integration. Again the depth of an audit depends on the strategic value of the supply (Bowersox et al. 2013: 89).

A widely used, more numerical method in acquiring new suppliers as well as assessing existing ones is using scorecards. These scorecards involve key performance attributes that a company wants to compare and measure. Each attribute is weighted based on the significance of that particular function, and then given a score on a decided scale. At the end all weighted scores are summed together to reach a total score as a result of a suppliers performance or suitability. Bowersox et al. (2013) say that a typical scorecard includes attributes such as product quality, delivery performance, cost reduction and service among others. Chopra and Meindl (2004) say that in addition to a quoted price other factors such as, replenishment time, on-time performance, supply flexibility, delivery frequency, supply quality, pricing terms, collaboration capability and supplier viability have to be considered and scored. According to Park et al. (2010) the most popular criteria used for supplier acquisition are quality, delivery and price or cost. The criteria selected usually vary by the main areas of interest for the assessing company (Bowersox et al. 2013: 90).

As mentioned before scorecards can be used for acquisition or for assessing existing suppliers. As a tool for assessing a scoring process should be performed periodically. Based on this feedback suppliers can respond and improve their functions. Relationships with well performing suppliers can be developed further. These suppliers can be designated as certified suppliers and deeper cooperation with them can be performed. This cooperation can involve creating partnerships, integration and establishment of further SRM (Bowersox et al. 2013: 91).

3.6 Processes

The importance of processes in supply chain management as in all business operations is significant. This section presents the basics of process theory and introduces the benefits that a process oriented work method brings to businesses.

A traditional perspective on performing and measuring work has been concentrating on individual functions. Generally acknowledged best practices showed that the best overall results were achieved by improving specific functions. However, during the last few decades these best practices have shifted in to process concentrated methods. This means that performing and measuring work is focused on optimizing the entire process including all individual functions in it. Linking those functions together in a chain of functions, a process, better overall results have been achieved than with striving for best individual result of each function separately (Bowersox et al. 2013: 14-15).

A supply chain process covers all information, material and money flows from customer need to its satisfaction. The goal of this process is a maximal overall fluency, flexibility, customer satisfaction and the measurement and development of the process instead of individual functions. Measuring and evaluating performance of a process is based on the customer experience of the results. Processes are developed for example by eliminating non-value creating activities, cutting down cycle times, re-planning phases of work and by improving information flows and technology (Ritvanen et al. 2011: 50-51).

In practice when moving to process thinking in an organization the overall culture has to transfer from ‘I work’ to ‘we work’. Other changes triggered by the process model are measuring the overall fluency instead of individual performance, improving the process instead of replacing the employee, understanding own role as part of a large process instead of only knowing own area of work, having team responsibilities rather than individual ones and measuring quality based on customer experience instead of experts opinions (Mäkelä. 2007).

As with any change some resistance will occur when moving towards process thinking. After investing on the change valuable benefits can be recognized: improve the understanding of entireties, clearer operations and management, resources used more efficiently, higher level of employee and customer satisfaction and easiness of development and introduction (Ritvanen et al. 2011) (Mäkelä. 2007).

3.7 Summary of Theory Practices

The following figure demonstrates the relationships between the discussed areas of theory. Procurement, supplier acquisition and assessment and SRM functions can be seen as sub-categories of SCM. The last two could also be seen as sub-categories of procurement, depending on the practical aspect where the theory would be utilized. Processes affect the whole supply chain and they should be the carrying force under which all operations are performed.

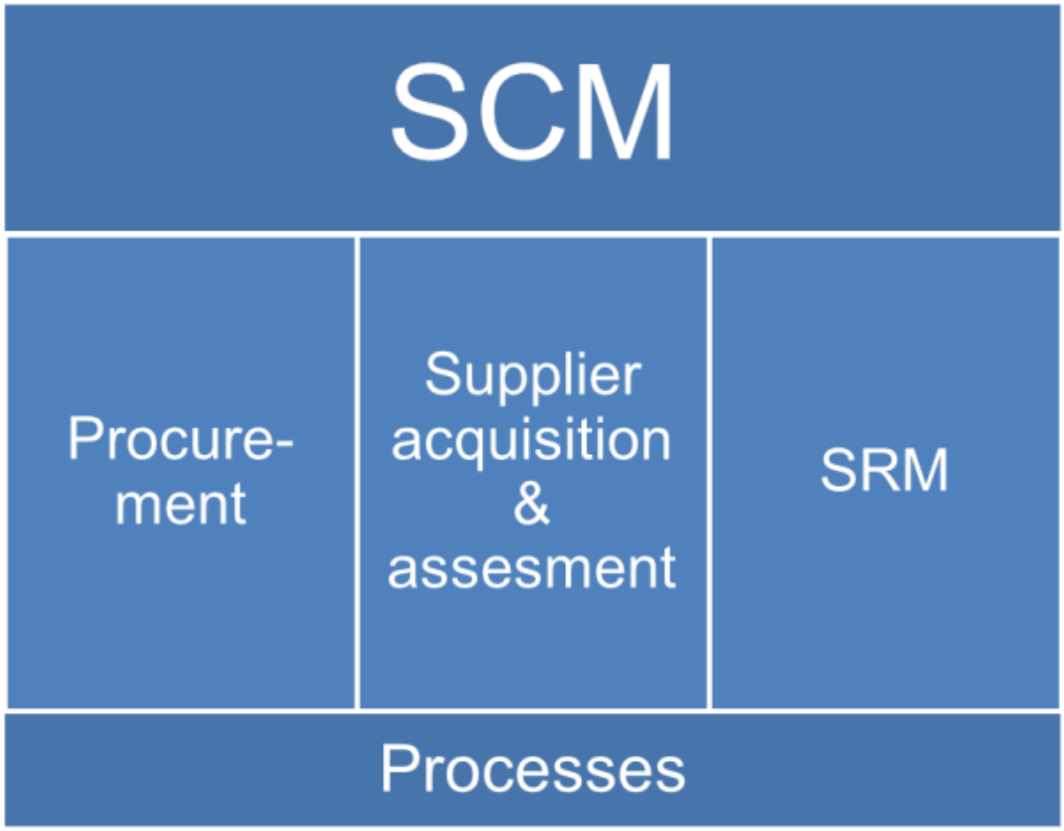

Figure 8. Discussed areas of theory

4 Proposals

This chapter gives suggestions for the case company based on the previously covered theoretical review, current state analysis and the encountered challenges. This part strives to give suggestions on what the company should be concentrating on and investing in to overcome the challenges and risks presented in section 2.4.

Concluded from the current situation the following main areas of improvement have been identified and will be discussed in more detail:

- Supplier measuring and assessment
- Demand consideration
- Supplier integration
- Establishing processes.

4.1 Supplier Measuring and Assessment

The first things to consider when acquiring suppliers are the size and number of suppliers that will be approached. As mentioned in section 2.1 the case company's suppliers are mostly online retailers with their own sales functions. Thus the case company has a very wide base for possible suppliers to choose from. So far cooperation has mainly existed with smaller retailers in the market who sometimes have a more specified catalog but recently bigger retailers have been approached as well. The main interest of expanding is towards the big players on the market. This approach holds both positive and negative attributes. These big players have extremely wide catalogs and solid established processes from where the case company can learn a lot. On the other hand the risk with such big partners is substantial. As mentioned before in section 2.3 the case company's operations are a very minor part of its big suppliers' overall operations. This presents the risk of supplier having overwhelming power over the case company. If the supplier wants to dismiss cooperation the impact on their overall operations would be minor. On the other hand the impact of this on the case company can cause

significant problems. Also the possibilities of developing functions and cooperation with big suppliers would be minor compared to the possibilities with smaller supply operators. A lot of interesting opportunities for deepening relationships and developing cooperation could rise from operating with smaller suppliers. As the impact of cooperation to revenues would be more equal and significant for both parties involved the level of commitment and interest in investing on improving the cooperation would be higher. Of course attributes such as size and diversity of catalog would be smaller and operations might have to be developed from the very beginning with the small suppliers. But as development possibilities could be higher the development could reach a level of performance higher to that with big suppliers.

The second factor that should be considered is the right number of suppliers. As the case company is multi-sourcing its product range it should aim at optimizing the most suitable supplier pool. As discussed in section 2.2 the case company is moving into sourcing up to 80% of its supply through market-place integration. However, the company has established integration with a very small number of suppliers. The risk here is similar to what was discussed in the previous paragraph. If a large portion of overall supply comes from a single supplier and this supplier dismisses cooperation the impact to the case company's supply can be significant. For this reason supplies should be sourced from several suppliers. A single supplier shouldn't cover a larger share of the overall supply than what can be lost without having trouble with sourcing the products from other suppliers. For managing this risk and other supply risk a pool of back up suppliers should be maintained. However, the consideration over the number should not only aim for high enough number but it should strive to an optimal number. As a high number of suppliers minimized supply risks it is still not the best option. If supply is spread over dozens of suppliers the value of the relationship for an individual supplier remains low. With concentrating on a lower number of suppliers the value of the relationship is higher for those suppliers and therefore they are more committed to the relationship and more likely to invest in the development and improvement of the supply chain.

The width and level of operations of big market operators have a strong reputation to speak for them as reliable partners. With smaller operators this reputation might be limited to some references of previous customers. Despite this all suppliers should be treated equally. A preface of drop shipping with all new suppliers should be performed prior to establishing deep collaboration and possible system integrations. This preface

could offer the case company experience and an image of the suppliers operations and of its suitability for further development. Another way of collecting experience based data would be making audit visits to supplier's premises. As discussed in section 3.6 audits can involve the assessment of supplier's personnel, facilities, equipment, systems and processes among other things.

In addition to this experience based data, some numerical data can be acquired by scoring suppliers. This scoring can be done with supplier scorecards as discussed in section 3.6. In the scorecards certain attributes of interest for the case company are chosen and each supplier is scored on the level of their performance for each attribute. This way the supplier gets scored, and it works as a numerical indicator of their overall performance. The attributes of a scorecard should be the same for all suppliers to achieve equal results. The following example of a supplier scorecard is based on an example presented by Bowersox et al. (2013) modified to fit the case company's possible interests. The attributes in the example are based on the criteria suggestions given in section 3.6 shaped to fit the possible interest of the case company.

Attribute	Weight	Score (max. 100)	Weighted score
Cycle time	0,20	95	19,00
Delivery performance	0,20	100	20,00
Catalog	0,15	80	12,00
Customer service	0,20	90	18,00
Collaboration capability	0,15	95	14,25
Communication	0,10	85	8,50
Total	1,00		**91,75**

Figure 9. Example of a supplier scorecard for the case company (Bowersox et al. 2013: 90).

The cycle time means the time from an order to its shipment. This is one of the existing criteria according to which the case company is assessing its suppliers at the moment. Delivery performance refers to order fill rate, a percentage of each order's fulfillment rate. Catalog refers to the versatility and flexibility of a supplier's catalog. Customer service refers to the level of customer support that a supplier gives to its shipment to final customers. This should be interesting for the case company if the shipment related to customer support is performed by its suppliers. Collaboration capability measures

how suitable a supplier and its operations are for deep partnership, collaboration and integration. Communication measures how fluently and spontaneously a supplier communicates and how reliable the information flow is.

4.2 Demand Consideration

The case company is using a hybrid model in its pre-sales functions. As auctions of new products are launched demand is created by pushing products to the market. As purchase data is inspected and some of the new products are profitable they are left in the catalogue for further auctions and therefore products are pulled to the market by customer demand. This shows that the case company is able to create higher demand by selecting interesting products to its auctions. The case company holds a good level of control on the demand and is able to direct the demand in the direction it wants. Of course the highest rate of customer satisfaction would be reached by offering the most wanted products. In this case forecasting demand could be specified as forecasting customer perceptions and desires. The case company has easy elements for anticipating demand and plan stocks ahead.

As the case company has control of the demand their goal for stock management should be to only auction products that hold a reliable stock behind them, and in this way avoid any kind of cancellations and out of stock situations. Auction planning should exist and it should be based on secure stock information. As the inventory is outsourced the reliability of stock information is trusted on the information provided by suppliers. Updating the inventory information daily would be preferable but at the very minimum, an update on the major changes on a daily basis could be enough to safely launch auctions. In order to do so the stock should be considered in launching all auctions. A stock equal to an average demand of an auction should always exist when launching an auction. This average demand could be calculated from purchase history data. As the case company's service has been running for some years now a lot of historical data exists. For new products auctioned every week the average data could be concluded from similar products from the same category. The more unreliable the demand forecast the more stock should exist to back up any irregularities in the demand.

As presented in section 2.2 a stock query tool exists for market-place integration. This tool relies on the accuracy of the information the supplier provides in the query. This increases the importance of absolutely accurate stock information. This accuracy can be further reached by integrating systems with suppliers. This is discussed in the following sections.

4.3 Supplier Integration

As discussed in section 2.2 the company has recently established a high level of system integration. The case company is striving to include more suppliers into this integration. However, operations other than just order movement could also be integrated. As discussed in section 2.3 the importance of accurate inventory information for risk free operations is significant. Therefore the most important area of integration with the alternating catalog would be inventory integration. This would mean a two-way catalog and inventory information sharing. Traditionally in inventory management a very typical method used is safety stock. In the case company's situation the safety stock could mean a certain minimum amount of stock that would enable auctions to be launched. In other words auctions would never be launched until zero stock but a certain leeway would exist and a safety level would always be left to avoid running out of stock in unexpected situations.

Sharing information and planning and preparing for future with supplier can significantly cut down risks and create more delivered value. For example if auction planning would be shared with suppliers they could better forecast future demand and anticipate inventories and thus cut down costs. Sharing more information with suppliers also establishes trust and increases their willingness to develop and invest on the cooperation. This also means sharing evaluation. Evaluation should not only cover the evaluation of supplier operations but also the operations of the buying side. This way innovation can come from both sides of the relationship for mutual benefits.

A possibility to improve drop shipping by integration would be to create some sort of an EDI system (presented in section 3.3) that both sides would use. The use of this system could be implemented with all drop ship suppliers and would in that way ease the management of orders by linking them into one system. This would also release the order fulfillment from using spreadsheets and transferring order information through

one system would enable an order line status to be changed instead of creating a new file for order lines with changed statuses. This would decrease double lines and repetitive information and also the possibility of human errors significantly. In general order lines should only appear once and any status change should be made on that one line instead of creating a new line in a new file with a different status contradicting with the original one. On the downside the development and implementation of such a tool would require significant resources. The question is if the increased value gained by this investment would be enough to cover for the expenses.

All integration generally strives for the ultimate fluency of the supply chain. This can be further established by integrating processes and ways of operating. Also sharing visions and strategies can benefit the functionality of an integrated partnership. All these factors together create the most value for the end customer and the most profit for both the buying and selling organizations.

4.4 Establishing Processes

To establish a maximal fluency of a supply chain between a buying and a selling organization processes should be developed for the best of the supply chain. Integrating processes and bringing ways of operating closer together increases the amount of created value. However a company's internal processes have to be established and working fluently prior to any development of mutual processes can take place.

Considering the young age of the case company and the tremendous changes that have occurred in its supply chain operations lately it is not strange that firm processes have not been established. In the current state the processes can't be said to be developed but are more likely to be created for the first time. The development and fluctuation of single functions has only lately reached a stage where processes could be established and documented.

As discussed with regard to the benefits of a process model in section 3.7, establishing a process model in the case company could be highly beneficial. The overall value of its operations could increase by focusing on the performance of processes instead of single functions and thus the end value delivered would increase. Using customer satisfaction as an ultimate tool for evaluating own performance instead of internally judg-

ing each employee's performance. Identifying problems in operations and solving and developing them would become easier. Also non-value creating activities could be eliminated and cycle times cut down by re-planning phases of work enabled by the process model and the understanding of entirety. Also introducing new tasks and employees would better support the overall functions when they would be implemented as part of a process, part of an entirety.

4.5 Summary of Proposals

- Pre-integration phase: evaluate the suitability of a supplier by a drop shipping phase before considering full integration
- Supplier scorecard: quick and easy way to numerically evaluate both prospective and existing suppliers
- Safety stock: a level of stock that should prevent auctions from being launched if reached for avoiding auctioning out of stock items
- Information sharing: important especially for the company to be able to plan auctions ahead and for suppliers to be able to plan inventories matching the auctions
- Inventory integration: in order to reach the highest possible level of accurate inventory information, the data exchange should be integrated
- Mutual development: in order to cut off non-value adding elements and to reach higher overall fluency of the supply chain, the supply chain partners should strive for developing mutual functions instead of concentrating on individual functions
- Establishing processes: mutual development would require the development of mutual processes. Prior to this internal processes should be well established and documented.

The level of a well-established and managed supplier relationship could be compared to collaborating with another office of your own company. The ideal situation to have would be shared goals and visions, high level of trust, and the feeling of working to-

gether for the partnership's benefit instead of working together for each partner's own benefit. As Hughes (2001) says, shared visions make collaboration easy.

5 Conclusions

This chapter discussed the results and concludes the study.

As discussed in Chapter 1 the case company is rather young and small and working in e-commerce. These facts set some challenges for the research as the area of business is rapidly changing and the case company is still open for new ideas and is constantly learning more and looking for new ways and directions of operating. This young state of the case company strongly affects their operations. As comparison, in an experienced and firmly established organization improvement might take place when some part of the operations is identified as faulty. This small part would be studied and improved to match the overall flow of the organization. In the case company's case, on the other hand, the organizational atmosphere is constantly looking to improve the overall operations. This fact was considered and it was therefore decided that the result of the study would represent general proposals for the case company to consider. These results and the whole research process are shortly summarized in the following section.

5.1 Case Summary

The process of this research started with identifying the topic area in Chapter 1 followed by a current state analysis of the case company's order fulfillment. This was presented in Chapter 2 and some risks and challenges were identified and a need for improving the order fulfillment was recognized. Based on this analysis the thesis aimed to reach the research objective:

- To give recommendations and suggestions for the case company to answer the current challenges and to improve its order fulfillment operations in order to avoid and eliminate risks.

The current state analysis was based on interviews held among related case company employees. All together 4 interviews were held and based on these a process flow chart of the order fulfillment was created and discussed in detail in Chapter 2. After the current state analysis related fields of theory were studied. The theoretical part focused

on supply chain management, procurement and supplier relationship management. These reviews are based on related literature and previous researches.

The objective of the study, the recommendations provided for the case company are presented in Chapter 4. The areas covered are supplier measuring and acquisition, considering demand, supplier integration and establishing processes. These recommendations are general proposals for the directions the case company should take in improving its order fulfillment and aspects that it should consider. The proposals are based on the topics studied in the theoretical review and then modified to fit the purposes of the case company.

5.2 Evaluation

The research aimed for giving suitable overall recommendations for the case company. The results of the study reached this objective well and in the manner expected.

Considering the current situation of the case company the research did not aim for a narrow perspective nor for a high level of detailed research on a specific area but rather it took a fairly wide approach. This approach suited the current state the best and valid results were reached at the end. However the level of results reached could have been more in touch with reality and actual improvement actions rather than just ideas. This level of detail leaves the results of the study on an idea level and no real life improvements, implementation or testing of the ideas has been done. These actions are left under the case company's consideration.

Supply chain management is a well-researched area of business and a lot has been written about it. The theoretical review in this study is based on a fairly small part of that literature and therefore plenty of aspects surely exist that are not discussed or considered in this research. However the aspects discussed are seen as sufficient research data for deriving results. It has to be considered that this case study only deals with a very specific situation and therefore the findings and results cannot be generalized.

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Frame of Interview Questions

Title and a short job description?

Describe your work step by step

Comments about this process?

How do you feel about the current state of the supply chain (SC)?

How reliable do you see the current SC?

Suppliers:

Amount of suppliers?

How do you feel about the current state of the following:

Information flow between the case company and its suppliers?

Reliability of suppliers?

Supplier performance?

Measuring/evaluating supplier performance?

Any methods?

Developing suppliers?

Supplier acquisition?

Drop shipping:

Delivery times from purchase to order to delivery?

Documentation/document flow?

How often do you feel that information is contradictory or unreliable?

How often are orders corrupted?

How often do cancellations occur?

What are the common reasons for cancellations?

How do suppliers inform about this?

How much Out Of Stock situations?

How do you think OOS is prevented at the moment?

Do you see this as problematic? Causes a lot of extra work and trouble?

How much detailed information do suppliers provide about their inventory/stock?

How(email? automated lists?)?

What happens to stock information then?

How do you see the demand forecasting at the moment?

How well would current order fulfillment tolerate high growth in volumes?

Processes:

Are any processes established or documented?

Opinion on what are the possible problems and challenges?

Products:

Categories? Sub-categories?

How many products per category?

Product turnover?

Auction products directly from supplier's inventory?

What percentage of auctions are new products?

Classifying product range? Which products/categories/sub-categories are more important

Contracts:

What kind of and how specific contracts exist?

About the turnover, inventory and quantities?

Auctions:

How many?

With what pace?

Are products launched evenly from all categories? Or launched everything that exists?

Launching auction step by step?

How is availability considered before launching an auction?

Purchases:

How is demand/amount of purchases forecasted?

How many purchases per auction/product on average? How varies between categories?

How well can this be foreseen/forecasted?

Online marketplace:

How large part of volume?

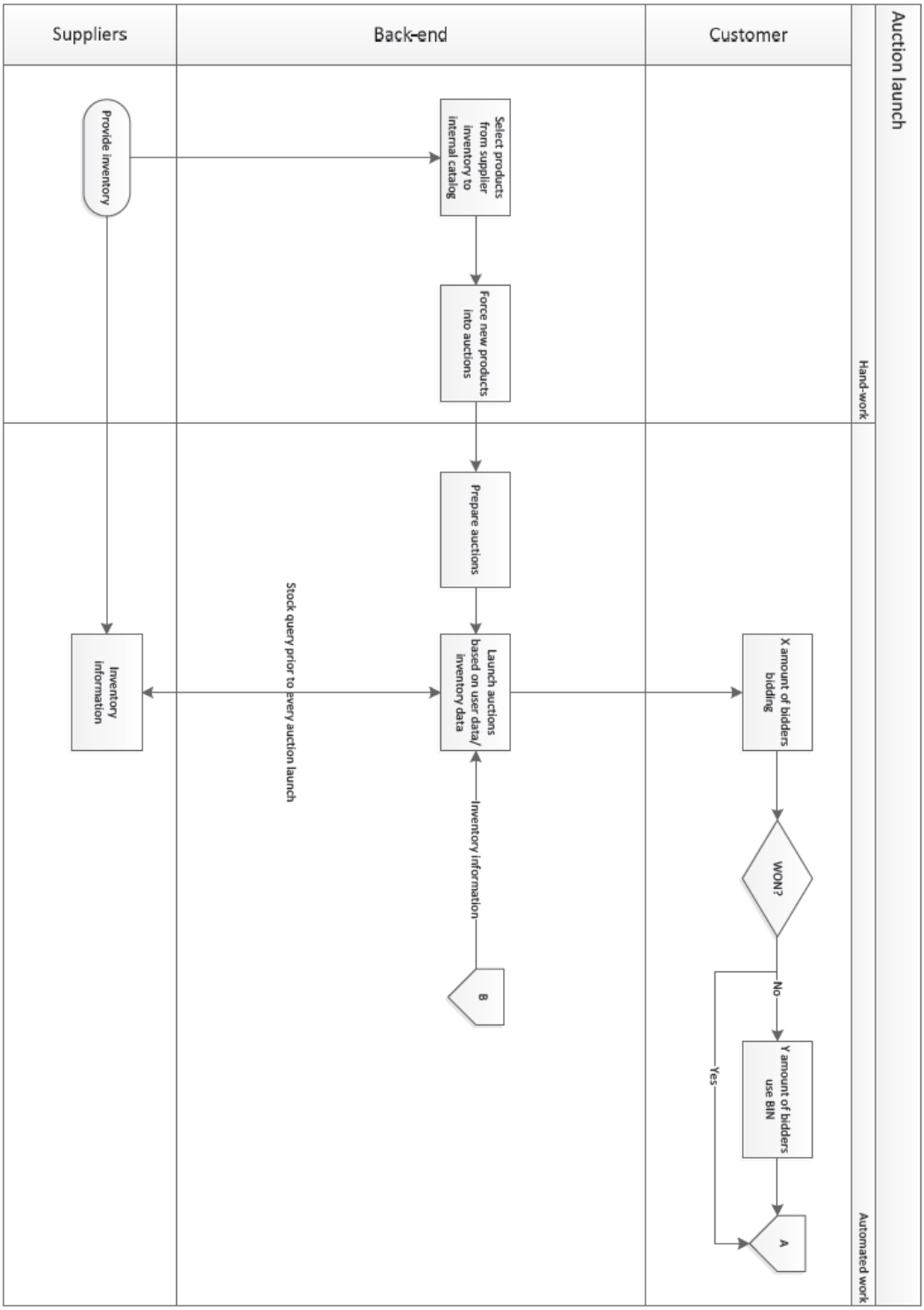
Supplier inventories involved in total or partly? How are products limited?

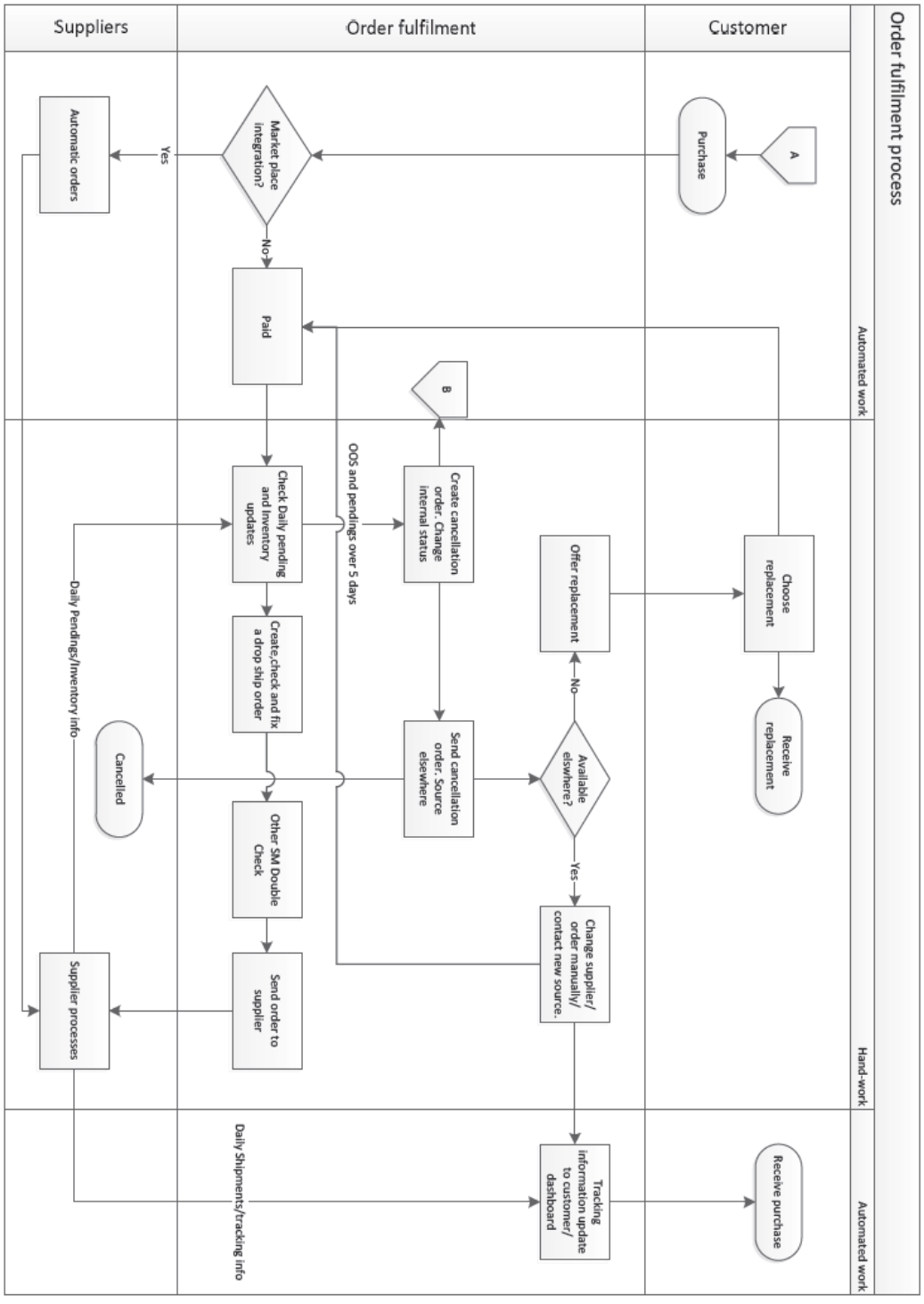
How many integrations at the moment?

How is demand-offer estimated?

Customer support directly from suppliers? Who deals with orders with corrupted information?

Order Fulfillment Process Description




Order fulfilment process
Customer
Order fulfilment
Suppliers
Automated work
Hand-work
Automated work
Purchase
A
Market place integration?
Yes
No
Automatic orders
Paid
B
Check Daily pending and Inventory updates
Create cancellation order. Change internal status
OOS and pendings over 5 days
Offer replacement
Choose replacement
Receive replacement
Available elsewhere?
No
Yes
Send cancellation order. Source elsewhere
Create,check and fix a drop ship order
Cancelled
Other SM Double Check
Send order to supplier
Supplier processes
Daily Pendings/Inventory info
Change supplier/ order manually/ contact new source.
Tracking information update to customer/ dashboard
Receive purchase
Daily Shipments/tracking info